1155-51 Three-dimensional High Frame Rate Power Doppler Epivascular Echo: A New Imaging Modality for Peripheral Vessels

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The utilization of three-dimensional (3-D) Power Doppler (PD) in peripheral vessels is unknown. We hypothesized that freehand 3-D PD is feasible and provides additional information, when compared with two-dimensional (2D) echo, color Doppler (CD) and 2D-PD.

Methods: We examined the radial (R) and brachial (B) arteries in 17 healthy volunteers (mean age 37 yrs, range 29–49, 10 M) using a 10 MHz linear vascular ultrasound probe (HDI 3000) with 40 frames/s.

Results: Mean radial diameter (length) were 0.44 ± 0.07 (2.81 ± 0.81) cm for 2D, 0.39 ± 0.13 (2.26 ± 1.18) cm for CD, 0.44 ± 0.8 (2.72 ± 0.91) cm for 2D-PD and 0.43 ± 0.06 (2.73 ± 0.54) cm for 3D-PD (see table). The correlation was fair between 2D and CD, which displayed a significantly shorter vessel segment (radialis, $p < 0.0001$, brachialis, $p < 0.04$). 3D Pd reconstruction was successful in all 34 acquisitions and took 1–2 min; cross-sections were seen in 28 (82%), branches in 19 (56%), additional vessels in 5 (15%) and tortius vessels in 4 (14%) of all images.

	CD	2D-PD	3D-PD
R Diameter	r = 0.03, Ns	r = 0.83	r = 0.794
B Diameter	r = 0.62*	r = 0.88†	r = 0.86†
R Length	r = 0.73†	r = 0.69†	r = 0.75†
	*p < 0.05	†p < 0.01	†p < 0.0001

Conclusions: 1. The display of vascular diameter and vessel length by 2D and 3D PD shows excellent agreement with 2D echo. 2. Freehand 3D Pd is feasible for the display and quantification of peripheral vessels and provides additional geometric and anatomical information.

1155-52 Diagnostic Utility of troponin-T to Exclude Perioperative Cardiac Events in Patients Undergoing Major Vascular Non-cardiac Surgery

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Objectives: We studied the value of TnT to exclude perioperative cardiac events (CE)(UAP/MI) in pts undergoing major vascular surgery.

Methods: 75 pts *without* CE were studied. TnT was measured on the 7th day after surgery using a whole-blood, qualitative immunoassay device (Boehringer). Two strip versions with different degrees of cross-reactivity with skeletal TnT were evaluated (TROP-T* and TROP-T sensitive#). URLs for CK and creatinine were 110 U/L resp 110 μmol/L. Preoperative risk markers and dobutamine stress echocardiography (DSE) results were recorded. CK (MB) determinations and ECG's were performed on postoperative days 1, 2 and 7. Clinical data, serial CK (MB), and ECG were used as a reference for CE. In case of disagreement echography was repeated.

Results: There was no difference in cardiac risk markers (diabetes, angina and previous MI) and DSE results (rest wall motion abnormalities and ischemia) between pts with a positive or negative TnT (all $p > 0.05$). Pts with a positive TnT had significantly higher serum CK and creatinine levels ($p < 0.01$). The specificity for CE was 62 and 66% for TROP-T respectively TROP-T sensitive.

TnT	n	CK	p	creat	p
pos*	15	615 ± 612		199 ± 183	
neg*	25	156 ± 151	<0.001	99 ± 43	<0.02
pos#	12	571 ± 439		316 ± 291	
neg#	23	171 ± 207	<0.001	89 ± 40	<0.001

Conclusions: The specificity of TnT for perioperative cardiac events in major vascular surgery was low if severe renal dysfunction or massive skeletal muscle damage occurred. The TROP-T sensitive showed no improvement for excluding CE.

TUESDAY POSTER

1156 Neural Factors in Hypertension

Tuesday, March 31, 1998, 3:00 p.m.–5:00 p.m.
Georgia World Congress Center, West Exhibit Hall Level
Presentation Hour: 4:00 p.m.–5:00 p.m.

1156-65 The Different Patterns of Cardiovascular Response to Tilt Table Testing in Hypertensive and Normotensive Patients With Syncope of Unknown Origin

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We hypothesized that hypertensive compared to normotensive patients with syncope of unknown origin have a different pattern of hemodynamic responses to head-upright tilt table testing and probably a different mechanism of syncope.

Methods: To address this issue we studied 52 consecutive adults referred for tilt test with syncope of unknown origin. We divided the patients into two groups: (1) hypertensive patients (n = 30, Female 21, Age 68 ± 14.4); and (2) normotensive patients (n = 22, Female 12, Age 57 ± 21.3). All patients were off medications and underwent 80 degrees head-upright tilt testing with duration of 45 minutes or less if symptoms or syncope developed.

Results: During tilt testing we observed an exaggerated BP reduction with normal increase of HR in hypertensive group versus exaggerated HR response with reduction of SBP and slight increase of DBP in normotensives. Table 1 contains the baseline hemodynamic parameters and cardiovascular responses to tilt table testing in both groups.

Table 1.	SBP	DBP	HR	Δ SBP	Δ DBP
Group 1	165 ± 13.9	89.8 ± 9.9	68.6 ± 13.2	41.7 ± 27.2	10.4 ± 16.6
Group 2	125 ± 14.1	71.7 ± 9.04	66.6 ± 14.3	13.6 ± 21.9	-4.2 ± 13.7
P value	<0.01	<0.01	n.s.	<0.01	<0.01

47% of hypertensive and 41% of normotensive patients developed syncope or presyncope during the test. These subgroups were comparable by age and their cardiovascular responses are shown in Table 2.

Table 2.	Δ SBP	Δ DBP	Δ HR	Time to Syncope
Group 1	56.1 ± 27.4	21.1 ± 14.1	-15.5 ± 24.6	19.6 ± 13.3
Group 2	18.1 ± 27	1.9 ± 15.5	-48.8 ± 52.2	32.2 ± 12
P value	<0.01	<0.01	n.s.	<0.05

We obtained a positive correlation between age and BP responses ($r = 0.5$, $P < 0.01$), and age and HR response ($r = 0.6$, $P < 0.01$) in normotensive group but not in hypertensive group.

Conclusion: Hypertensive patients had predominantly vasodepressor mechanism of syncope with more profound BP drop and shorter time to syncope during upright tilting compared to normotensives. This finding could probably be explained by greater impairment of baroreflex control of circulation in hypertensive patients.

1156-66 Autonomic Modulation of Heart Rate and Blood Pressure in Hypertensive Subjects With Symptoms of Anxiety

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Background: The influence of anxiety symptoms on autonomic nervous system cardiovascular control has never been studied in hypertense subjects. This study was designed to verify the presence of sympathetic hyperactivity in hypertension associated with anxiety symptoms.

Methods: Neuroautonomic cardiovascular control was evaluated using short-time power spectral analysis of RR and arterial pressure variability at baseline and after the head-up tilt test. The two spectral components principally influenced by the autonomic nervous system are the low-frequency (LF) component, due to sympathetic modulation and the high-frequency (HF) component, due to parasympathetic activity. The ratio of LF to HF powers (LF:HF) provides an index of the sympathovagal sinus balance. We studied 33 hypertensive subjects (mean age: 47 ± 1 years; M:F = 19:14) and 37 normotensive controls (mean age: 47 ± 2 years; M:F = 20:17) divided into four subgroups: hypertensive subjects with two or more anxiety symptoms, hypertensive subjects without, normotensive controls with two or more anxiety symptoms and normotensive controls without.

Results: LF:HF and LF during rest were significantly higher ($p < 0.05$) in hypertensive and normotensive groups with two or more anxiety symptoms than in the two groups without. HF of systolic blood pressure was significantly